

**ENCLOSED
IS THE
LITERATURE
THAT YOU
REQUESTED
DESCRIBING
THE MCS
ANVIL SERIES
OF CAD/CAM
PRODUCTS**

INTRODUCING ANVIL - 4000™

Thank you for your interest in the CAD/CAM products of Manufacturing and Consulting Services, Inc. (MCS). Enclosed is literature on the ANVIL-4000L™ and ANVIL-4000S™ Software Packages. Literature describing the ANVIL™ Graphic Resource Station, the ANVIL Intelligent Interactive Terminals, the ANVIL Timesharing Service Bureau and the ANVIL-3000™ Low Cost turn-key systems will be forwarded to you as soon as it is available.

LITERATURE ENCLOSED

1. MCS Company Description
2. ANVIL-4000 Brochure
3. ANVIL-4000L Price List
4. ANVIL-4000S Price List
5. ANVIL-4000L Lease Prices
6. ANVIL-4000S Lease Prices

ANVIL-4000L AVAILABILITY

ANVIL-4000L is available on the following computers:

1. The Data General 32 bit line
2. The Digital Equipment Corp. 32 bit line
3. The Harris 24 and 48 bit lines
4. The IBM 32 bit line
5. The Perkin-Elmer 32 bit line
6. The Prime 32 bit line (Models 550 and up)

ANVIL-4000L is available for lease on all of the above computers except for the IBM and Data General machines.

ANVIL-4000S AVAILABILITY

ANVIL-4000S is available only on the HP1000F computer at the present time. It is anticipated that ANVIL-4000S will be available on the DEC PDP11 (Model 34 and larger) by January 2, 1982. ANVIL-4000S can be leased on the HP1000F only.

DIFFERENCES BETWEEN ANVIL-4000L and ANVIL-4000S

ANVIL-4000S does not contain data graphs, curve mesh surface, fillet surface, point mesh surface, 5-axis swarf cutting, symbolic APT output, COMPACT II output, loft/rho conics, cylinder slice or feature development.

In addition, the 16 bit word size provides a slightly diminished capability in GRAPL, AUTO-GRAPL, Numerical Control display and edit, N/C profiling and N/C pocketing. The smaller size of the arrays which are used in these particular functions should have no detrimental effect on any but the very largest designs.

DEMONSTRATIONS AND BENCHMARK

ANVIL-4000 Demonstrations and Benchmarks are available at our offices in Irvine and Santa Ana, California. A Midwest Marketing and Support Center is projected for the latter part of 1981 or first quarter 1982.

ITEMS CURRENTLY UNDER DEVELOPMENT

The following items are currently under development and will not be included in ANVIL-4000 until the first quarter of 1982:

1. Pipe design, routing, interference checking, analysis and schematics
2. Sheet metal bending and unbending
3. PC design and automatic routing
4. A complete architectural and plant layout/design package

The additional incremental cost for each of these items will range between \$5,000 and \$10,000.

DELIVERY

Both ANVIL-4000L and ANVIL-4000S are available thirty (30) days ARO.

TRAINING

In addition to the training available at the MCS facilities in the use of its CAD/CAM products, MCS has also generated a complete set of auto-training materials. This material is available for a nominal fee and allows for in-house training of an unlimited number of personnel. The training consists of slide presentations with associated cassettes, which operate in either manual or "voice-over" modes, and a training manual which offers a step-by-step introduction into CAD and CAM. These training tools take the user from an elementary stage up to a sophisticated level in a short time. Typically, a user can expect to be able to produce moderately complex drawings at the end of one week's training. This is possible because of the "friendly" environment which ANVIL-4000 offers.

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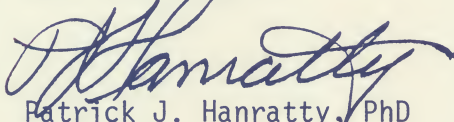
MARKETING PRESENTATIONS

Marketing presentations of ANVIL-4000L are available from the salesmen at Digital Equipment Corp., Harris Corp., Perkin-Elmer Corp. and Prime Computer, Inc. Brochures which correspond to these voice-over slide presentations are also available.

ADDITIONAL INFORMATION

If you have any further questions, please don't hesitate to contact an ANVIL-4000 Marketing Representative at (714) 540-6871.

Very truly yours,



Patrick J. Hanratty, PhD
President

PJH/mj

Enclosures



ANVIL-4000L™

SCHEDULE OF PRICES

Effective May 1, 1981

ANVIL-4000L™

SINGLE COMPUTER PRICES

CONTINENTAL U.S. ONLY

PRODUCT NUMBER	DESCRIPTION	PREREQ	LIST PRICE	MONTHLY MAINT.
ANVIL4000L-001	Base package includes: MODALS and FONTS DELETE PATTERN MANAGEMENT GROUP TRANSLATE/ROTATE/DUPLICATE ZOOM/DEPTH/VIEW CONTROL LINE 2-D SPLINE HYPERBOLA GENERAL CONIC POINT SET CURVE STRING GRAPL ¹ ATTRIBUTE MANAGEMENT ¹ METRIC/ENGLISH/RESIZE INTERACTIVE CONFIGURATOR BLANK/UNBLANK PART MANAGEMENT ARRAY MIRROR REGENERATION POINT (EXPLICIT & IMPLICIT) ARC/CIRCLE/FILLET ELLIPSE PARABOLA LOFT CONICS OFFSET CURVE DATA VERIFICATION AUTO GRAPL ¹ LEVELS STRETCH		\$31,000	\$263.50
ANVIL4000L-101	Extended Geometry includes: 3-D SPLINE SURFACE EDGE CURVE DRAFT CURVE COMPOSITE SURFACE ¹ PROJECTED SURFACE SPHERE CONE SURFACE OF REVOLUTION RULED SURFACE CURVE DRIVEN SURFACE CROSS SECTION SLICE ¹ FILLET SURFACE ¹ VECTOR SURF. INTERSECT. CURVE COMPOSITE CURVE OFFSET SURFACE PLANE CYLINDER TORUS 3-D TABULATED CYLINDER DEVELOPABLE SURFACE SURFACE DISPLAY CONTROL CURVE MESH SURFACE ¹	-001	\$28,000	\$238.00
ANVIL4000L-201	Drafting includes: DRAFTING MODALS CROSS-HATCHING HORIZONTAL DIMENSIONS ANGULAR DIMENSIONS DIAMETER DIMENSIONS GENERAL LABEL CHARACTER FONT CONTROL DETAIL MAGNIFICATION TRUE POSITION TOLERANCE GRAPH (Data Plot System) ² PROJECTED ENTITY VERTICAL DIMENSIONS PARALLEL DIMENSIONS CIRCULAR DIMENSIONS GENERAL NOTE CENTERLINE PATTERNS BALLOON USER DEFINED CHAR. SETS ¹ USER DEFINED DRAFTING STANDARDS ¹	-001	\$15,000	\$127.50

¹ Reduced functionality on 16 bit word computers (ANVIL-4000S)

² Not available on 16 bit word computers (ANVIL-4000S)

ANVIL-4000L™

SINGLE COMPUTER PRICES

CONTINENTAL U.S. ONLY

PRODUCT NUMBER	DESCRIPTION	PREREQ	LIST PRICE	MONTHLY MAINT.
ANVIL4000L-301	Numerical Control includes: APT CL-FILE OUTPUT POINT-TO-POINT POCKETING ¹ CL-FILE/CUT VECTOR DISPLAY AND EDIT ¹ N/C MODALS PROFILING ¹ POST PROCESSOR MACRO ¹ LATHE 3-AXIS END CUTTING (including 3-AXIS POCKET) 5-AXIS END and SWARF (side) CUTTING ²	-001	\$ 26,000	\$221.00
ANVIL4000L-401	Analysis includes: Basic SPLINE ANALYSIS (plots of slope, curvature, radius of curvature, X and Y vs. parameter) 2-D SECTION ANALYSIS (perimeter, area, c.g., moment of inertia, radius of gyration, polar moment of inertia and polar radius of gyration) 3-D ANALYSIS ¹ (area, volume, weight, weight/unit) length, 1st moment of mass, center of mass, moment of inertia, spherical moment of inertia and spherical radius of gyration) EXTENDED SPLINE ANALYSIS GENERAL CURVE ANALYSIS and DEFINITION	-001	\$ 7,000	\$ 59.50
ANVIL4000L-900	Package 000	Includes item 001 plus Source code	\$ 37,200	\$316.20
ANVIL4000L-910	Package 100	Includes item 101 plus Source code	36,600	285.60
ANVIL4000L-920	Package 200	Includes item 201 plus Source code	18,000	153.00
ANVIL4000L-930	Package 300	Includes item 301 plus Source code	31,200	265.20
ANVIL4000L-940	Package 400	Includes item 401 plus Source code	8,400	71.40
ANVIL4000L-990	Package 990	Includes items 001-401 no Source code	95,000	807.50
ANVIL4000L-999	Package 999	Includes items 001-401 plus Source code	115,000	977.50

The above prices are for single computer use. They include one (1) set of user documentation. One (1) set of system documentation is included with systems containing Source code. Installation and training are extra. Lease prices are available upon request.

The Multiple Computer price is two and one half (2½) times the Single Computer price plus 25% of the Single Computer price per computer after the third computer. The price upon which the 25% is based is the Single Computer price at the date each additional computer is put into use. In order to qualify for the Multiple Computer price, Customer must pay the aforementioned fee within forty-five (45) days from execution of the contract. The discount for Multiple Computers is automatically voided if payment is not received within forty-five (45) days of the date of invoice.

ANVIL-4000L is only available as a full system outside the Continental United States as Package 990 at a price of \$115,000 or as Package 999 at a price of \$138,000. Software maintenance is available for a monthly charge of \$977.50 for Package 990 and \$1173.00 for Package 999.

The availability of ANVIL-4000L software is contingent upon Customer entering into a Proprietary Software Agreement. MCS reserves the right to change ANVIL-4000L packages, prices, terms and conditions without prior notice.

¹Reduced functionality on 16 bit word computers (ANVIL-4000S)

²Not available on 16 bit word computers (ANVIL-4000S)

NOTE: ANVIL-4000L requires a minimum computer word length of 24 bits. Prices for ANVIL-4000S (the 16 bit version of ANVIL-4000L) are available upon request.

mcs



MANUFACTURING AND CONSULTING SERVICES, INC.

17942 Cowan, Irvine, California 92714

PHONE: (714) 540-3921

TWX: (910) 595-2790

ANVIL-4000L™ SOFTWARE LEASE PRICES

ANVIL-4000L is available for lease as a full system only (Package 990) with a minimum one (1) year term. An option to acquire a permanent license is included. The cost of the lease is as follows:

CONTINENTAL U.S.	OUTSIDE CONTINENTAL U.S.
\$3,167.50/month Software Lease	\$3,850.00/month Software Lease
<u>807.50/month Maintenance</u>	<u>950.00/month Maintenance</u>
\$3,975.00/month Total	\$4,800.00/month Total

A 15% discount is available on the maintenance portion only. Payment must be made one (1) year in advance to qualify for the discount.

Lease terms are: installation charges plus the first month lease upon execution of the contract and prior to actual installation. Lease payments are due and payable one (1) month in advance. Source code and Systems Manuals are not available with lease systems.

PLEASE NOTE: ANVIL-4000L Software Leases are only available on certain computers. A list of these computers is available upon request.

ANVIL-4000L is a trademark of Manufacturing and Consulting Services, Inc.



ANVIL-4000S™

SCHEDULE OF PRICES

Effective May 1, 1981

ANVIL-4000S™

SINGLE COMPUTER PRICES

CONTINENTAL U.S. ONLY

PRODUCT NUMBER	DESCRIPTION	PREREQ	LIST PRICE	MONTHLY MAINT.
ANVIL4000S-001	Base package includes: MODALS and FONTS DELETE PATTERN MANAGEMENT GROUP TRANSLATE/ROTATE/DUPLICATE ZOOM/DEPTH/VIEW CONTROL LINE 2-D SPLINE HYPERBOLA GENERAL CONIC POINT SET CURVE STRING GRAPL¹ ATTRIBUTE MANAGEMENT¹ METRIC/ENGLISH/RESIZE INTERACTIVE CONFIGURATOR	BLANK/UNBLANK PART MANAGEMENT ARRAY MIRROR REGENERATION POINT (EXPLICIT & IMPLICIT) ARC/CIRCLE/FILLET ELLIPSE PARABOLA PROJECTED ENTITY OFFSET CURVE DATA VERIFICATION AUTO GRAPL¹ LEVELS STRETCH	\$27,000	\$229.50
ANVIL4000S-101	Extended Geometry includes: 3-D SPLINE SURFACE EDGE CURVE DRAFT CURVE PROJECTED SURFACE SPHERE CONE SURFACE OF REVOLUTION RULED SURFACE CURVE DRIVEN SURFACE CROSS SECTION SLICE¹	VECTOR SURF. INTERSECT. CURVE COMPOSITE CURVE OFFSET SURFACE PLANE CYLINDER TORUS 3-D TABULATED CYLINDER DEVELOPABLE SURFACE SURFACE DISPLAY CONTROL	-001 \$24,000	\$204.00
ANVIL4000S-201	Drafting includes: DRAFTING MODALS CROSS-HATCHING HORIZONTAL DIMENSIONS ANGULAR DIMENSIONS DIAMETER DIMENSIONS GENERAL LABEL CHARACTER FONT CONTROL DETAIL MAGNIFICATION TRUE POSITION TOLERANCE	VERTICAL DIMENSIONS PARALLEL DIMENSIONS CIRCULAR DIMENSIONS GENERAL NOTE CENTERLINE PATTERNS BALLOON USER DEFINED CHAR. SETS¹ USER DEFINED DRAFTING STANDARDS¹	-001 \$14,000	\$119.00

¹Reduced functionality on 16 bit word computers (ANVIL-4000S)

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ANVIL-4000S™

SINGLE COMPUTER PRICES

CONTINENTAL U.S. ONLY

PRODUCT NUMBER	DESCRIPTION	PREREQ	LIST PRICE	MONTHLY MAINT.
ANVIL4000S-301	Numerical Control includes: APT CL-FILE OUTPUT POINT-TO-POINT POCKETING ¹ CL-FILE/CUT VECTOR DISPLAY AND EDIT ¹ N/C MODALS PROFILING ¹ POST PROCESSOR MACRO ¹ LATHE 3-AXIS END CUTTING (including 3-AXIS POCKET)	-001	\$25,000	\$212.50
ANVIL4000S-401	Analysis includes: Basic SPLINE ANALYSIS (plots of slope, curvature, radius of curvature, X and Y vs. parameter) 2-D SECTION ANALYSIS (perimeter, area, c.g., moment of inertia, radius of gyration, polar moment of inertia and polar radius of gyration) 3-D ANALYSIS ¹ (area, volume, weight, weight/unit length, 1st moment of mass, center of mass, moment of inertia, spherical moment of inertia and spherical radius of gyration) GENERAL CURVE ANALYSIS and DEFINITION	-001	\$ 7,000	\$ 59.50
ANVIL4000S-900	Package 000		\$32,400	\$275.40
ANVIL4000S-910	Package 100		31,400	266.90
ANVIL4000S-920	Package 200		16,800	142.80
ANVIL4000S-930	Package 300		30,000	255.00
ANVIL4000S-940	Package 400		8,400	71.40
ANVIL4000S-990	Package 990		80,000	680.00
ANVIL4000S-999	Package 999		95,000	807.50

The above prices are for single computer use. They include one (1) set of user documentation. One (1) set of system documentation is included with systems containing Source code. Installation and training are extra. Lease prices are available upon request.

The Multiple Computer price is two and one half (2½) times the Single Computer price plus 25% of the Single Computer price per computer after the third computer. The price upon which the 25% is based is the Single Computer price at the date each additional computer is put into use. In order to qualify for the Multiple Computer price, Customer must pay the aforementioned fee within forty-five (45) days from execution of the contract. The discount for Multiple Computers is automatically voided if payment is not received within forty-five (45) days of the date of invoice.

ANVIL-4000S is only available as a full system outside the Continental United States as Package 990 at a price of \$95,000 or as Package 999 at a price of \$115,000. Software maintenance is available for a monthly charge of \$807.50 for Package 990 and \$977.50 for Package 999.

The availability of ANVIL-4000S software is contingent upon Customer entering into a Proprietary Software Agreement. MCS reserves the right to change ANVIL-4000S packages, prices, terms and conditions without prior notice.

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ANVIL-4000S is available for lease as a full system only (Package 990) with a minimum one (1) year term. An option to acquire a permanent license is included. The cost of the lease is as follows:

CONTINENTAL U.S.	OUTSIDE CONTINENTAL U.S.
\$2,820.00/month Software Lease	\$3,492.50/month Software Lease
<u>680.00/month Maintenance</u>	<u>807.50/month Maintenance</u>
\$3,500.00/month Total	\$4,300.00/month Total

A 15% discount is available on the maintenance portion only. Payment must be made one (1) year in advance to qualify for the discount.

Lease terms are: installation charges plus the first month lease upon execution of the contract and prior to actual installation. Lease payments are due and payable one (1) month in advance. Source code and Systems Manuals are not available with lease systems.

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CAD/CAM SUPPLIER TO THE WORLD

THE COMPANY

Manufacturing and Consulting Services, Inc. (MCS) was founded in 1971 by Dr. Patrick J. Hanratty, a pioneer in man-computer communication. Prior to forming MCS, Dr. Hanratty spent more than fifteen years designing Computer-Aided Design and Computer-Aided Manufacturing systems for General Motors Corporation and McDonnell Douglas Company.

Today, the MCS technical staff consists of a cadre of professionals who are recognized experts in the disciplines of design, drafting, and manufacturing representing every major industry: aerospace, automotive, heavy equipment, weapons systems, computers and electronics. In addition, MCS has a strong representation on its design team from the academic world.

The initial MCS product was a system called ADAM® (Automated Drafting And Machining) designed specifically for 16 bit computers. MCS, through ADAM, performed initially as a "manufacturers' manufacturer" (i.e., the supplier of graphic systems to other companies wanting to enter the interactive graphics marketplace). As a result, ADAM is the basis for a large number of turnkey systems available in today's market.

AD-2000® began in October 1974 and was designed to take advantage of the large number of wide-word computers being introduced in the mid-1970's. The first AD-2000 system was installed at Los Alamos Scientific Laboratories in June of 1976. The growth of AD-2000 was guided by input from the AD-2000 Users Group, ensuring that MCS would create a product geared towards the production requirements of designers, draftsmen and machinists. The heavy production use of AD-2000 resulted in enhancement requests from the AD-2000 users which made it apparent that at some point CAD/CAM technology would have to evolve to reflect the enhancements required by these production users. It also became apparent that no single CAD/CAM system would economically meet the requirements of all segments of industry involved in design and manufacturing. Thus, in 1981 MCS launched the ANVIL series of CAD/CAM products in order to fill the complete spectrum of requirements by users representing the largest to the smallest segments of industry.

Today, MCS is the world's leading supplier of computer-independent integrated CAD/CAM systems and has committed itself to achieving a dominant position in the CAD/CAM marketplace in the 1980's by offering a product which is unparalleled in its excellence.

THE PRODUCTS

ANVIL-4000L™ —

A complete integrated design, drafting, management information and manufacturing system which allows the user to select the computer most compatible with his other computer-aided engineering, computer-aided design, and computer-aided manufacturing requirements. ANVIL-4000L has been designed to run on most of the world's wide-word (24 bits or larger) computers.

ANVIL-4000S™ —

A modularized version of ANVIL-4000L designed for 16-bit minicomputers.

ANVIL-3000™ —

Complete midrange turnkey CAD/CAM systems which deliver most of the power of the ANVIL-4000 software at a hardware/software price of less than \$100,000.

ANVIL GRAPHIC RESOURCE STATIONS —

Semi-autonomous units operating under the ANVIL-4000 software. The ANVIL Graphic Resource Station relieves the host computer of all of the interactive requirements of ANVIL-4000, allowing for the number of terminals supported by a host computer to more than double, while maintaining instantaneous interaction, regardless of the line speed used to connect to the host computer.

ANVIL GRAPHIC RESOURCE CENTERS —

A large timesharing network which brings the full capabilities of the most advanced CAD/CAM system to the small and medium user for the rental cost of a terminal and compute time. This timesharing system also serves as a test bed for companies who are evaluating CAD/CAM in their own operations.

THE APPROACH

The development of the ANVIL-4000 has been closely guided and controlled by the people who have the greatest interest in ANVIL-4000 — the MCS customer base.

The MCS Software Users Group and its various sub-committees (Numerical Control, Design/Analysis, Drafting, Management Information Systems, Manufacturing Systems and Data Base Management) determine the direction in which the ANVIL system will evolve.

The MCS philosophy is based on the premise that requirements for a cost-effective CAD/CAM system must be specified by users. Thus, ANVIL reflects the strong influence of designers, draftsmen and numerical control experts who use it in day-to-day production.

The strong, well-functioning MCS Software Users Group, coupled with the MCS commitment to satisfy its requirements, guarantees that ANVIL will continue to grow as the world's most effective CAD/CAM system.

Some ANVIL-4000 Users

Aerojet Strategic Propulsion Co.
A.K. Stamping Co., Inc.
ATO
Bath Iron Works
Bendix Corp.
Boeing Computer Services
Borg-Warner
Bristol-Myers Co.
British Aerospace
Caterpillar Tractor Co.
Communications Satellite Corp.
Dept. of Commerce (MARAD Division)
Eastman Kodak Co.
Elliott Co.
Fiat

Gardner-Denver Co.
General Motors Corp.
Graphics Manufacturing Systems, Inc.
Hewlett-Packard
Honeywell
Hughes Aircraft Co.
International Harvester Co.
Liebherr-Werk
Los Alamos Scientific Laboratories
Mason & Hanger
Massey-Ferguson, Inc.
Matsushita
National Aeronautics and Space Administration
Newport News Shipyards
Owen-Illinois

Perkin-Elmer
Pratt and Whitney Aircraft
Rockford Drop Forge Co.
Rockwell International
RTE/ASEA Corp.
Sandia Laboratories
Structural Dynamics Ltd.
Tenneco
Textron Inc.
The Talley Corp.
Thiokol Corp.
Unarco Industries, Inc.
United Technologies
Westinghouse Electric Corp.
Westland Helicopters Ltd.



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